

## ABSTRACT OF THE INVENTION

5 A liquid organic, fuel cell is provided which employs a  
solid electrolyte membrane. An organic fuel, such as a  
methanol/water mixture, is circulated past an anode of a cell  
while oxygen or air is circulated past a cathode of the cell.  
The cell solid electrolyte membrane is preferably fabricated  
from Nafion™. Additionally, a method for improving the  
10 performance of carbon electrode structures for use in organic  
fuel cells is provided wherein a high surface-area carbon  
particle/Teflon™-binder structure is immersed within a  
Nafion™/methanol bath to impregnate the electrode with Nafion™.  
A method for fabricating an anode for use in a organic fuel cell  
15 is described wherein metal alloys are deposited onto the  
electrode in an electro-deposition solution containing  
perfluorooctanesulfonic acid. A fuel additive containing  
perfluorooctanesulfonic acid for use with fuel cells employing a  
sulfuric acid electrolyte is also disclosed. New organic fuels,  
20 namely, trimethoxymethane, dimethoxymethane, and trioxane are  
also described for use with either conventional or improved fuel  
cells.

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